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Effects of students' Liberal Studies learning experience on their development of information skills

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Chapter 1: Introduction

1.1 Background

Liberal Studies is one of the core subjects in the New Senior Secondary (NSS) curriculum. Apart from broadening students' knowledge base and enhancing their social awareness, Liberal Studies aims to provide learning experience that can "foster students' capacity for life-long learning" (Curriculum Development Council [CDC] & Hong Kong Examinations and Assessment Authority [HKEAA], 2015, p.1). To cultivate students' ability to engage in life-long learning, teachers should help students to develop a number of skills and habits that enable self-directed learning, for example, information skills (CDC & HKEAA, 2015).

1.2 Research Significance

Despite the emphasis of information skills as one of the outcomes in the curriculum, the effort to examine how Liberal Studies is actually affecting students' development of information skills has been insufficient despite the curriculum has been implemented for a few years. Hence, this research aims to investigate into the effects of students' Liberal Studies learning experience on their development of information skills. It is hoped that the research can provide not only useful information for teachers to gain understanding of how students perceive their learning experience but also insights for

curriculum planners to evaluate the implementation of the curriculum.

1.3 Research Questions

For the above reasons, the following research questions are formulated:

1) How is the level of information skills of Hong Kong secondary school students?
2) What is students' Liberal Studies learning experience?
3) How does students' Liberal Studies learning experience affect their development of information skills?

Chapter 2: Literature Review

2.1 Liberal Studies in the New Senior Secondary Curriculum

2.1.1 Rationale of Liberal Studies

In order to equip students with the capabilities to cope with the challenges in the 21st century and the demands of the knowledge-based society (Education and Manpower Bureau [EMB], 2007), Liberal Studies has been implemented as a core subject in the New Senior Secondary (NSS) curriculum in Hong Kong since 2009 (CDC & HKEAA, 2015). The goal of Liberal Studies is about enabling students to become citizens with a broad knowledge base, high adaptability to change, independent thinking and life-long learning capabilities so that they are able to see things from multiple perspectives and to establish their own views and values (Education Bureau [EDB], 2010).

2.1.2 Liberal Studies Teaching and Learning Approach

An issue-enquiry approach is adopted for teaching and learning in Liberal Studies. It guides both the selection of content and the pedagogy for the curriculum (CDC & HKEAA, 2015).

Issues explored in Liberal Studies are often “contemporary and perennial” (CDC & HKEAA, 2015, p.86), and have been widely discussed in society because they involve

controversies while no consensus have been reached (EDB, 2010). Due to the ever-changing nature of the issues, a single ‘textbook’ should not be relied on as a major learning resource. Instead, teachers and students should refer to a wide range of information sources such as books, newspapers, magazines, television programmes, web-based learning materials, and even their own experiences (EDB, 2010).

Issue-enquiry is “not aimed at developing a detached understanding of issues, but at making practical judgments” (CDC & HKEAA, 2015, p.87). Therefore, students should not merely learn the established knowledge but construct knowledge through issue-enquiry. To facilitate the enquiry process, which involves the acquisition of a comprehensive understanding of the issues, mastery of related facts, analysis of the core of a question, consideration of different perspectives and making reasoned judgments, teachers are advised to take a developmental approach and employ various learning and teaching strategies (CDC & HKEAA, 2015). The challenge for teachers is to adopt pedagogies that are “consistent with the dynamic nature of knowledge and conducive to the development of students’ lifelong learning skills” (CDC & HKEAA, 2015, p.81).

2.1.3 Liberal Studies Learning Experience of Students

Liberal Studies curriculum requires teachers to provide a self-directed learning

environment (CDC & HKEAA, 2015), which shares similar characteristics with a constructive classroom (Kwan & Wong, 2014). Despite there is little research on students' Liberal Studies learning experience, there is still a study enquiring into students' perceptions of their constructivist classroom learning environment. Kwan and Wong (2014) revealed that both male and female students from different bandings perceived their learning environment to be moderately constructivist in nature. In particular, younger students and students in band 1 schools tended to have a stronger perception. Regarding the constructivist nature of a learning environment, it is found that Liberal Studies students in Hong Kong perceive their learning environment to be high on the scales of 'uncertainty' *(to challenge the beliefs about the independent objective reality)*, 'personal relevance' *(to make use of daily experiences for the development of knowledge)* and 'student negotiation' *(to build knowledge through social communication or collaboration)* and low on the scales of 'shared control' *(to invite to share control in the learning environment)* and 'critical voice' *(to express concerns about learning through questioning the teacher's pedagogies)* (Kwan & Wong, 2014).

2.2 Information Skills

2.2.1 Introduction to Information Skills

Information skills are defined as a set of abilities to recognize when information is needed, and to locate, evaluate and use effectively the needed information (American Library Association, 1989). While UNESCO (2006) described the skills as an extension of reading and arithmetic abilities necessary for individuals and their communities to function and progress. Information skills and information literacy are often used interchangeably by scholars in different regions (Karim, Shah, Din, Ahmad & Khalid, 2013). Specifically, information literacy is the goal of individuals to be information literate while information skills are the means for achieving that goal (Society of College, National and University Libraries, 1999; Chartered Institute of Library and Information Professionals, 2004).

The process to achieve information literacy can be divided into the Big Six Information Skills (see Figure 1 in Appendix A). They are the support for solving information problems and the standards to evaluate the state of information literacy (Eisenberg & Berkowitz, 1990; EMB, 2005).

2.2.2 Government Initiative

Date back to 1998, the Hong Kong Government confirmed its vision and mission to promote and implement Information Technology (IT) in education (CDC, 2000). In

2000, the Government established the IT learning targets at different stages of schooling, and their implementation and assessment methods (CDC, 2000). In the following year, addressing all-round development and life-long learning, the Government set directions for curriculum development for the coming decade (CDC, 2001). The Government's initiative in empowering students to master life-long skills that can be used beyond classroom in this information era is even made clearer with the publication of 'Information Literacy Framework for Hong Kong Students'. In the Framework, standards and indicators of information literacy are described in details for the implementation of information literacy education (EMB, 2005).

2.2.3 Information Skills of Hong Kong Students

Notwithstanding the publication of learning targets and education framework, there is no standardized territory-wide assessment for information literacy. Different scholars attempted to examine the information skills of Hong Kong students with different methods, for example, questionnaires, search diaries, interviews and etc. (Chu, 2012). Chu (2012) carried out a test to assess the information literacy of primary school students in Hong Kong. The result is that although all of the students show some understanding of information literacy, students in general can only meet 50% of each standard with only a few of them can fully meet all the standards. For secondary school

students, it is revealed from their search diaries that most of them feel uncertain and confused at the beginning of an inquiry project, and many remain frustrated after the search process. The students also rate online webpages as the most important source of information while some express feelings of being overwhelmed by information overload (Jan van Aalst, Hing, May & Yan, 2007).

2.2.4 Information Skills as a Learning Outcome of Liberal Studies

Information skills are critical to life-long learning. It is because they extend learning beyond formal classroom settings and provide practice with self-directed investigations (Association of College and Research Libraries, 2000). Meanwhile, 'learning how to learn' is the main aim of the Liberal Studies curriculum since the Government stressed that life-long learning skills can prepare students for further studies and future employment (EMB, 2007). As a result, information skills are regarded as an important learning outcome of Liberal Studies.

During the issue-enquiry process in learning Liberal Studies, students are expected to participate in the collection, processing and analysis of information from various sources instead of relying on the teachers and textbooks (EDB, 2010). These processes train up students' information skills. To assess their information skills, both school-

based assessment and public examinations are designed accordingly. When students have to complete the school-based assessment, an Independent Enquiry Study (IES), they must demonstrate their information skills as the entire issue-enquiry have to be done independently. The two papers in public examinations also assess students' abilities in processing information such as identification, application and analysis of given information (EDB, 2010).

2.3 Theoretical Framework of the Research

After reviewing the literature, a theoretical framework of the research is constructed (see Figure 2 in Appendix A). It is believed that the rationale of Liberal Studies brings out some effects in terms of reality and ideal. In reality, the rationale affects the teaching and learning approach, which further shapes students' learning experience of the subject. In ideal, the rationale determines the curriculum's learning outcomes, which includes information skills. Due to limited research on students' Liberal Studies learning experience and their development of information skills, a research gap is identified. For this, this research would not only fill the gap but also investigate into how students' Liberal Studies learning experience affects their development of information skills.

Chapter 3: Method

3.1 Participants

The research involved 23 participants with 11 male and 12 female. They were from a Form 5 Liberal Studies class in a secondary school in Hong Kong. The school is operated under the Direct Subsidy Scheme of the Education Bureau and uses English as the medium of instruction. Most of them have received Liberal Studies education as a school-based curriculum since Form 3.

3.2 Data Collection

All participants were invited to take an Assessment of Information Skills. The Assessment is written in English and can be completed within 30 minutes. They did not know the assessment scope and format before the assessment so that no preparation or revision could be done beforehand. Thus, the results of the Assessment could fairly reflect their information skills without intervention.

The completed scripts were then marked. Based on the scores of all participants, the top 3 were selected for an individual interview. Meanwhile, among those who were willing to be audio-recorded in the interview, 4 who got the lowest scores were also selected. Altogether, there were 7 participants invited for the interview. The 30-minute

interviews were conducted to collect data on their Liberal Studies learning experience.

3.3 Ethical Concerns

The completed Assessments on Information Skills and interview notes are stored in a locked cabinet at the researcher's home. The interview recordings are stored in an encrypted computer folder in the researcher's notebook computer. Participants have the right to review the recordings and notes at any time and erase part of or the entire recording and notes. If any participants wish to withdraw from the study, all the data collected from that participant can be erased and destroyed.

Each participant is randomly assigned a number from 1 to 23 as a personal identifier, which is not related to their identities in school such as student ID and in any other aspects of life such as Hong Kong ID. No school, individual or personal information would be identified in any of the publications and public dissemination activities. All data and personal identifiers will be destroyed in 1 year after the first publication of this research paper. Participation is entirely voluntary, and all information obtained are used for research purposes only. The research was not the teacher of the student participants and did not handle their assignments and assessments, therefore, there was no conflict of interests between the researcher and the participants. The research would bring

minimal psychological harms and discomfort to the participants.

3.4 Instruments

3.4.1 Assessment of Information Skills

The Assessment of Information Skills was designed for the research (refer to Appendix C). According to the Big Six Information Skills suggested by Eisenberg and Berkowitz (1990) (see Figure 1 in Appendix A) and with reference to the Information Literacy Cognitive Coding Scheme adopted by EMB (2005) (see Figure 3 in Appendix A), 9 questions and their marking rubrics were formulated to make sure all the skills are appropriately assessed. For each information skill, participants need to demonstrate it at least twice as required by the questions. This helps to confirm the participants' possession of certain skill and to prevent them from giving the correct answers by blind guess.

3.4.2 Interview on Liberal Studies Learning Experience

The interview was structured according to Kong's conceptualization of the components of learning experiences (2008). The 3 components are 'positive learning experience', 'teacher support in learning' and 'active learning experience'. Consequently, the interview questions were formulated under the structure and with reference to some

previous studies on students' perception on classroom learning environment and experiences, and the characteristics of a constructivist classroom.

'Positive learning experience' refers to students' feeling when they are learning in class. Examples of positive feelings are 'interesting', 'useful', 'fun' and 'energetic' (Kong, 2008). In the interview, interviewees described their feelings when they are having Liberal Studies lessons and their feelings towards the classroom learning activities. They also commented on the learning atmosphere when information skills are taught.

Applying the concept 'teacher support in learning' to Liberal Studies context, it means 'teacher's role as a facilitator'. Liberal Studies teachers can facilitate students' learning by giving constructive feedback and suggestions to their learning progress. In the interview, interviewees recalled how their teachers use the learning materials, give instruction and provide feedback.

'Active learning experience' in Liberal Studies means that the students are active learner who engage in group tasks in class, search information and request shared control of their learning progress proactively (Kwan & Wong, 2014). In the interview, interviewees reflected on their engagement in class, learning habit and initiative to monitor their own learning.

Chapter 4: Students' Performance in Information Skills

Participants' performance in the Assessment of Information Skills will be reported in this chapter. For each skill, the overall performance will be described and an example of participants' answers of different levels will be presented.

4.1 Task Definition

All participants attempted to do the questions. Most participants were able to define the problem and formulate a relevant question for investigation. Many of their questions indicated the scope, stakeholders, cause-and-effect or a mix of these. However, some participants wrote the questions as personal conversational questions, involving a subject 'you', which makes the questions not investigative. Considering participants' performance in both questions, it is observed that 'task definition' may be an uncomplicated skill that many participants either know all or nothing, with only a few of them are at mediocre level.

One of the questions assessing this skill required participants to write one appropriate question that has to be asked if they have to investigate into 'renewable energy' (refer to Appendix C question 1.2). Refer to Table 1 in Appendix B, participant 11's answer

is regarded as good because the scope in terms of time and aspects are indicated. Participant 3's answer is mediocre because it is still relevant to the given topic. Participant 10's answer is poor because it shows no relevance to the topic.

4.2 Information Seeking Strategies

Most participants attempted to do the questions. About half of them directly wrote some possible answers to that investigative questions instead of the information sources to solve that problem. Among those who wrote information sources, all of them were able to determine the range of possible sources. Nevertheless, only a few attained 'good' performance for they suggested keywords to narrow down the search results to increase the possibility of acquiring appropriate information. No 'mediocre' participants were observed. A majority were 'poor' owing to the broad information sources they have suggested. From participants' performance in these questions, it seems that students may have difficulty pinpointing a wide range of relevant sources to acquire appropriate information when they are presented with a problem.

One of the questions assessing this skill required participants to determine two information sources to solve the problem of 'what are the causes of poverty in Hong Kong?' (Refer to Appendix C question 2.1.1). Refer to Table 2 in Appendix B,

Participant 21's answers are regarded as good because they are possible and potential sources to acquire the appropriate information on the causes of poverty. On the contrary, answers similar to that of participant 7 are regarded as poor because the range of sources to acquire appropriate information was not narrowed down.

4.3 Location and Access

Most participants attempted to do the questions, which is an extension of the previous questions. All of them were able to identify the location of the information sources written in the last part. All of them included 'the Internet' or resources online as a location of sources. Many of them wrote 'newspapers' while a minority of them wrote 'Liberal Studies textbook' for the location of certain information. Those who decided to seek information by interview previously were able to specify the possible groups of people to be interviewed also. It may be true that nowadays the Internet is possibly the most popular information source as it is economical and convenient to access (Chu, 2012).

As an extension of the previous questions, participants needed to locate the sources that they have suggested in the last part, i.e. where they can find the information sources (refer to Appendix C question 2.2.2). Refer to Table 3 in Appendix B, Participant 4's

answer is good as it is a specific location for the required information while those similar to participant 7's are regarded as poor because the location is not specific enough.

4.4 Use of Information

Most participants attempted to do the questions. They were able to read the text given and tried to extract information from it. A number of those who attempted the questions were 'good' since they pinpointed the appropriate information from the text. A majority of them were 'mediocre' as they identified the appropriate information together with some irrelevant information. The number of participants who were 'poor' is similar to that who were 'good'. They were 'poor' because they either identified part of the appropriate information, i.e. with part of the key information left out, or could not identify the appropriate information at all.

To assess this skill, participants were required to read short texts and circle on it the answers to the given questions (refer to Appendix C question 3.1 and 3.2). In the Assessment, a text reporting on World Health Organization (WHO)'s warning on air pollution and air pollution in Beijing is given. Formulated with exact wordings from the text, the question is set with the answer '*to protect people from the deadly smog*'

expected from participants (refer to Appendix C question 3.1). Refer to Table 4 in Appendix B, since participant 16 could pinpoint the answer, he attained ‘good’ performance. Participant 7 could find out the answer but included other irrelevant sentences so he was ‘mediocre’. Participant 11 was ‘poor’ because he could not identify the answer at all.

4.5 Synthesis

A majority of participants attempted to do the questions. Many of them could present information and articulate their ideas through writing that the reader could understand their thinking. They used words such as ‘affect’, ‘caused by’ and/or ‘if’ to connect sentences and present the logics. About half of them were able to organize information from multiple sources. A minority of them could derive new concepts of understandings from the information. A few of them were able to make inference and connections while only very few could draw conclusions.

To assess this skill, two questions which are similar to the data response questions in Liberal Studies examinations were set (refer to Appendix C question 4.1 and 4.2). The first question assesses participants’ skills to derive new concepts. They had to describe one possible effect of air pollution on the society based on the multiple textual sources

given (refer to Appendix C question 4.1). Refer to Table 5 in Appendix B, participant 13's answer is quite 'good' because he was able to identify an appropriate effect and elaborate on the connection between air pollution and its effect with correct citation from the sources. Participant 11 could also identify an appropriate effect but he did not quote evidence from the source, so his answer is regarded as 'mediocre'. Some 'mediocre' answers included evidence from the source but without elaboration on the connection between air pollution and its effect. Answers similar to that of participant 10 are 'poor' because only the effect is stated.

The second question assesses participants' abilities to make inference, connections and draw conclusions. They had to explain how traffic flow is related to premature death with reference to the sources (refer to Appendix C question 4.2). Refer to Table 6 in Appendix B, participant 16's answer is 'good' as the relationship is clearly concluded with elaboration and citation of evidence from both sources. Participants who gave similar answers to participant 19 are 'mediocre' because they did not state the relationship clearly but they tried to explain the existence of a relationship by either citing evidence from the sources or elaborating with their own words. The answers that only involve explanation on the relationship or information from the sources, for example, participant 8's answers, are regarded as 'poor'.

4.6 Evaluation

A majority of participants attempted to do the question. Nearly all of them could suggest ways to evaluate the product of information problem-solving, with many participants could even indicate criteria such as ‘accuracy’, ‘reliability’, ‘relevance’ and ‘comprehensiveness’. Nonetheless, only two of them mentioned ways to judge the information problem-solving process. It seems that students are unfamiliar with this area. It is probably because ‘evaluation’ is not specifically mentioned in their lessons. Therefore, from students’ own experiences, which are usually judged by the products of their work such as test scores, they could easily suggest many ways of evaluating information problem-solving product while neglecting the importance of the process.

The question to assess this skill required participants to suggest three ways that teachers can evaluate their performance in a project investigating into ‘globalization in Hong Kong’ (refer to Appendix C question 5). Refer to Table 7 in Appendix B, if the participant, such as participant 11, suggested ways to evaluate on both the product and process of information problem-solving, the performance of that participant is ‘good’. If evaluation on either process or product is observed, for example, participant 2’s answers, the performance is regarded as ‘mediocre’. Participant 7’s answers are ‘poor’ because they are irrelevant.

Chapter 5: Discussion

In this chapter, the 7 interviewees' Liberal Studies learning experience will be reported, compared and discussed to explore the factors affecting the development of information skills. The interviewees will be identified as Student A, Student B … Student G according to their scores attained in the Assessment of Information Skills in descending order. Student A, B and C were the top three in the Assessment, i.e. high achievers, while Student D, E, F and G ranked last four, i.e. low achievers.

5.1 Students' Learning Environment

How students' learning environment, including ecological environment and perceived affective learning environment, affect the development of information skills will be discussed with the interview results in this section.

A supportive ecological environment of a student, for example, family and school, is positively related to the student's development of information skills. In the interviews, the interviewees shared how they learnt the six information skills (refer to Appendix B question 2).

> *Student A: When I was 4 to 6, my dad started giving me books to read and asking me to summarize and tell the main message… The English*

teacher in Form 2 is very good. She taught us basic information skills like searching, skimming, citing, making summary and how to critically analyze and evaluate things.

Student B: I personally ask a lot of questions and do a lot of searching. I think I learn these skills in language subjects like English and Spanish but not really in Liberal Studies.

Student C: I practised these skills in the projects for humanities subjects. My language sense for making summary is developed in English subject.

However, Student D, E, F and G reported how Liberal Studies, including the tasks done in class and the homework, trained a majority of their information skills. For the remaining information skills that they could hardly tell how they have acquired them, it is shown in the Assessment that they did not acquire them at all. In short, high achievers had good development of information skills owing to their upbringings by parents and other subject teachers; on the contrary, low-achievers had their information skills developed because of Liberal Studies. Early foundation of skills is found in high achievers but not in low achievers, who showed late acquisition of the skills. Comparing their dependence on skills acquisition from Liberal Studies training, it is also observed

that high achievers were more prepared for skills acquisition in other aspects of life outside Liberal Studies classrooms unlike low achievers. One possible explanation for their difference in information skills development may be their ecological environment. Bronfenberner's ecological model (1994) suggested that apart from innate biological and psychological makeup, immediate physical and social environment can also affect a child's development. The social environment could be family and school. Applying this model to the interpretation of their development of information skills, a supportive ecological environment may be a facilitating process for Student A, B and C to be high achievers. It is because Student A, B and C have more opportunities in their ecological environment, i.e. family and school, to train up their information skills and get them ready for skills acquisition. Ecological environment is presumably a factor positively affecting a student's development of information skills.

Not only does the ecological environment matter, a positively perceived affective learning environment by the student also facilitates the development of information skills. This is deduced from the interviewees' sharing on their feelings towards Liberal Studies in the interviews (refer to Appendix B question 1).

> *Student A: Not so good in the lesson because it doesn't promote critical thinking and doesn't make me think harder. Rather I feel it is*

training for examination, like a 10-mark question then we have to think of 5 points… I feel like it should have more open discussion and allow thinking outside the scoring system.

Despite his negative feeling towards Liberal Studies lesson, he expressed his enthusiasm in the subject and high-order thinking in the later part of the interview. Student B thought that Liberal Studies lessons were fun as they could express own opinion. Student C and E described Liberal Studies lessons as informative.

Student C: I feel Liberal Studies is easy because I'm able to understand abstract concepts through discussion into real-life issues.

Student D, F and G showed no interest in Liberal Studies.

Student D: It's hard for me to maintain attention when the teacher is talking too much.

Student F: I'm lazy to listen because things are seen and work are done before.

Student G: I feel like not learning anything after the lesson.

High achievers tended to enjoy learning Liberal Studies or agree with the learning objectives of Liberal Studies while low achievers tended to be uninterested in Liberal

Studies due to different personal reasons. It appears that they held contradicting opinion towards Liberal Studies although they were in the same Liberal Studies class. So the problem of what leads to the difference in opinion can probably be accounted for their difference in the development of information skills. Placed in physically the same Liberal Studies learning environment, their affective perception of the learning environment differs. High achievers show positive affection in Liberal Studies but low achievers found it difficult to appreciate Liberal Studies, i.e. negative affection. Such a difference in affection affects their learning and acquisition of skills during Liberal Studies lesson. Gable and Harmon-Jones (2010) pointed out that positive affect can facilitate memory for centrally presented information and broaden attentional focus, and vice versa. Consequently, it is likely to enhance engagement and academic achievement (Frederickson, 1998). Positive affect, especially interest and curiosity, promotes achievement because interested students who take pride in their work are more motivated to seek out supplemental learning resources (Ladd, Birch & Buhs, 1999). This argument is also in line with the interview results as Student A, B and C reported that they would search for extra information and seek help from teachers in their own time. It is concluded that a positive affective environment can facilitate students' acquisition of knowledge and skills. Therefore, how students perceive their learning environment, i.e. their perceived affective learning environment, plays a

positive role in their development of information skills.

To conclude, a student's development of information skills can be promoted by a supportive ecological environment and a positive affective learning environment.

5.2 Teacher's Support

This section is composed of interviewees' narration of their teacher's instruction, feedback and pedagogy, and the justification for the postulate, teacher's effective support can facilitate students' development of information skills.

Interviewees reported how their teachers used the learning materials and instructed them (refer to Appendix B question 3 and 4). The teacher used a school-based booklet, which contained background information and blanks for note-taking and 'plenary', i.e. students' reflection on what they have learnt, for each issue. As described by all the interviewees, the teacher usually showed some videos as a starter. All students would then draw a mind map and discuss in groups the stakeholders involved in or different perspectives of the issue. The teacher would also explain on some difficult concepts. Normally, a past paper question or a question come up by the students themselves would be assigned as classwork or homework after the teacher's explanation on the

requirement and time limit. The description of a typical Liberal Studies lesson and teacher's instruction is more or less the same by all interviewees.

Teacher's feedback to all interviewees were similar as well (refer to Appendix B question 5). All interviewees commented that there was not a lot of feedback from their teacher.

> *Student A: The teacher doesn't really give me feedback. Once I asked the teacher, 'I don't understand why you marked my work in this way.'*
>
> *The teacher replied, 'oh, you're 5* already, don't complain!'*

This is why Student A felt that the teacher was not helping students' critical thinking. Student B illustrated his teacher's typical feedback as well, it is '*everything is fine'*. Student C clarified that for most of the time the teacher's feedback was focusing on the points and arguments students gave. Student D, E, F and G did similar narration.

When interviewees were asked specifically how their teachers reacted to their correct and wrong answers (refer to Appendix B question 6), there were more to tell by them. Generally when the interviewees answered teacher's questions correctly, the teacher would give acknowledgement such as '*good job*', '*it's a good point*', '*it's correct*' with sometimes a smile or the giving out of candies. The teacher would briefly tell what they have done well also. When the interviewees answered wrongly, the teacher would say

'no' or '*wrong'* and call on the next student to answer until there was a correct answer.

> *Student B: If we answer wrongly, the teacher will say 'it's not like this, think about this…' then give some guidance for us to think, but like after 3 seconds and students can't come up with anything, the teacher will tell the answer.*

Meanwhile, the interviewees emphasized that they felt safe to answer and to be wrong.

> *Student E: There is no drawbacks if we speak wrongly because once I did so, the teacher said 'Liberal Studies is not about right or wrong but depends on how you interpret the question'.*

To study the teacher's role in engaging students in classroom learning, interviewees also reflected on their reasons for engaging in class (refer to Appendix B question 9).

> *Student A: I still do whatever the teacher says but I will sleep or mess around after quickly fulfilling his request.*

> *Student B: I just like Liberal Studies. It's not a hard subject. I just need to pay attention for a while then I can get on to do the task. If I don't listen then I don't know what to do next.*

Student C: Teacher tells so I do. I feel it's useful and I'm really learning something.

Student D was only interested in the tasks with visual cues, the biggest stimulus for him. Student E confirmed that teacher's presence was influencing him.

Student E: The teacher is energetic and not just sitting on the chair but keep moving around to give help and also give me pressure to work.

Student F did whatever the teacher told because he thought Liberal Studies was interesting. Student G's situation was similar to that of Student A. However, Student G listened to teacher's talk because it mattered the classwork and homework which would affect his grades.

From all the above findings in this section, how the interviewees' teacher has supported their learning is revealed. Since all interviewees recalled the same instruction and use of learning materials in class, the teacher should have used a lot of traditional whole-class approach instead of small-group instruction. The teacher's feedback to different interviewees was very consistent also. All interviewees agreed that the teacher acknowledged students' answers and touched on the interpretation but without going

into them deeply. Unlike the instruction and feedback of the teacher, the teacher's role in engaging students is perceived differently by the interviewees. They were on-task due to different personal reasons, for example, intrinsic motivation, extrinsic motivation, teacher's presence, obedience and etc. Giving almost identical instruction and depth of feedback but producing students with significantly different level of information skills is interesting for further discussion. It appears to be very fair for a teacher to teach all students in the same way. But the reality is that high achievers' needs were unsatisfied and low achievers' performance in the Assessment of Information Skills was poor. This reflected that the current approach is not feasible, or at least not suitable for the interviewees. The teacher might want to be fair, however, being fair does not mean to be equal. What is fair for students is to adopt the best strategies that fit the students to maximize their abilities (Wormeli, 2006). Therefore, equal instruction and feedback certainly do not mean fairness as they cannot meet every student's needs. On the other hand, differentiated instruction is doing what is fair for the students because different approaches are used for increasing students' competence in handling anything undifferentiated (Wormeli, 2006). This approach is in line with the guiding principles of the Liberal Studies curriculum. In Liberal Studies, the teacher should facilitate students' learning by providing scaffolds so that learners will be able to manage their learning and have their competence increased over time (CDC & HKEAA, 2015). To

scaffold students, one guiding principle is that the teacher should “cater for students’ individual differences by providing learning activities at different levels of difficulty and a variety of different learning experiences” (CDC & HKEAA, 2015, p.138). For the teacher of the research participants, there were in fact some differentiated methods done, for instance, providing more examples to help students understand the concepts, rephrasing questions when no one knew the answer and standing beside some students to keep them focused. Nevertheless, based on the findings, the interviewees possess different personal qualities and learning styles that the teacher ought to react to the diversity and use differentiated instruction. Since the interviewees were responsive to different stimuli such as academic interest, teacher’s presence and graded assignment, teacher could even make use of the diversity to further exercise differentiation by regrouping students or assigning tasks according to their interests and learning styles, so that the individual needs of students could be catered.

To sum up, teacher’s effective instruction, feedback and pedagogy promote the development of information skills of students. However, providing equal instruction and feedback is found to be not helpful in the development of information skills while differentiation may be the key.

5.3 Qualities of Students

Based on the interview results, it is found that good qualities of students have positive impacts on their development of information skills. The qualities are quality of thinking, expectation on learning outcome, self-regulation in learning and self-concept.

Interviewees' qualities of thinking and expectation on learning outcome are reflected from their answers to the interview questions. As mentioned, the interviewees experienced same class learning activities and very similar feedback from the teacher. Even so, the interviewees commented on them differently (refer to Appendix B question 3 and 5).

> *Student A: I think mind map is too wide-reaching with too much freedom. For video, we only analyze the explicit meaning of it. It doesn't help critical thinking either… Actually the teacher doesn't analyze things thoroughly enough but I often want to get more perspectives and analyze in depth and breadth.*

> *Student B: The activities are conventional… I would like more discussion, not those just talk about the questions and answers, and interaction with classmates, perhaps different groupings for more perspectives.*

Student C: They are stereotyped because the same sets of tasks are used for every case.

Despite that, Student D, E, F and G coincidentally felt that the activities are good. They thought the activities were interesting, interactive and useful because they could talk to other people. A similar attitude towards the teacher's feedback is found. Student A and B expected an elaborated feedback from the teacher while Student C suggested that the teacher should also comment on presentation skills for presentations and organization for mind maps instead of merely focusing on the points and arguments. Receiving similar feedback from the teacher, Student D, E, F and G believed that the feedback was enough for them.

From the interviewees' comments on the activities and teacher's feedback, difference in their quality of thinking is observed and found influential to their development of information skills. According to Paul and Elder's universal intellectual standards (2008), there are a number of essential standards for checking the quality of thinking, i.e. clarity, accuracy, precision, depth, breadth, logic and fairness. Using these standards to evaluate the quality of thinking of the interviewees, it is quite obvious that high achievers demonstrated slightly more accuracy, depth, breadth and logic in thinking than the low achievers despite all of them could think and express with clarity. High achievers

perceived the activities as low-level because they were not simply evaluating them on the surface and telling their immediate feeling of being in the activities but analyzing them in depth. They were able to judge relatively objectively the usefulness of those activities by the subject's objectives and the way of execution from more likely a third-person perspective. In contrast, low achievers showed satisfaction of the activities when they tended to solely reflect on their first-person feeling. Since they were evaluating learning activities, a comparison of their quality of thinking could also be done by the use of Kirkpatrick's four levels of training evaluation (1994). The four levels are 'evaluation of reaction' (satisfaction or happiness), 'evaluation of learning' (knowledge or skills acquired), 'evaluation of behaviour' (transfer of learning) and 'evaluation of results' (impacts on community). High achievers considered two levels, i.e. evaluation of reaction and of learning, while low achievers only considered one level, i.e. evaluation of reaction. High achievers had higher quality of thinking, deeper analysis and good performance in the Assessment of Information Skills yet low achievers had lower quality of thinking, shallower analysis and poorer performance in the Assessment. It shows that a higher quality of thinking fosters the development of information skills.

Adopting the same interview findings as above, expectation on learning outcome is found positively affecting students' development of information skills. High achievers

were more aware of the learning outcomes of Liberal Studies. They knew that the ultimate goal of studying the subject is to acquire high-order thinking skills. Therefore, when they had to comment on the learning activities, they evaluated them by the criteria of whether they can achieve the learning outcomes of the curriculum. Low achievers might not be aware of the expected learning outcomes of Liberal Studies so they did not consider the effectiveness of those activities and their relevance to the learning outcomes. The understanding of Liberal Studies curriculum can affect the expectation on learning outcome, which is one difference between the high achievers and the low achievers. Expectation of learning outcome can influence their learning and development of information skills. Bandura (1971) argued that outcome expectations determine one's motivation, which drives him to achieve the anticipated consequence. When one has expectation on his learning, he engages in self-evaluation with certain performance standards because of his self-imposed demands. Therefore, expectation of learning outcome is unconsciously providing an additional motivating influence for students to keep their behaviour or performance in line with the standards. This may explain why the high achievers with expectation of learning high-order thinking through Liberal Studies attained a better result in the Assessment of Information Skills while low achievers with no display of outcome expectation performed poorly in the Assessment.

The factor affecting the development of information skills, self-regulation in learning, is revealed by analyzing interviewees' report on their active learning experience (refer to Appendix B question 2, 4 and 7).

> *Student A: I have a revision booklet only for academic achiever. It's for independent learning... I search a lot of information at home also… There is a website that I particularly like. It is called lesswrong.com.… If I have anything doesn't understand, I ask other teachers for their feedback.*
>
> *Student B: I will personally ask the teacher if I don't understand anything.*
>
> *Student C: If I have anything interested to know, I will ask the teacher but I will also go home and find references on the issues. If it is about skills, I usually read my classmates' work and compare them with mine to see how I can improve.*
>
> *Student G: I feel that I am not an active learner because I won't search for more information that aren't covered in the lesson at home unless I know it will appear in the examination... I feel that the news and concepts are very abstract. Even if I read a lot, I can't apply to*

answering the exam questions.

Comparing the active learning experience of the interviewees and their achievement in the Assessment of Information Skills, it is found that more self-regulated learners attain higher scores in the Assessment. Whilst the high achievers reported extra learning experience outside classroom, for instance, seeking help from teachers personally and searching more information at home, low achievers admitted that they would not do so in their own time. Reading, studying, programmed instruction, computer-assisted instruction, modeling, guidance and feedback from peers and teachers are all examples of self-regulatory learning activities (Zimmerman & Schunk, 2001). High achievers are found engaging in more self-regulatory learning activities than the low achievers. The high achievers displayed more personal initiative, perseverance and adaptive skill in their learning that make them become self-regulated learners (Zimmerman & Schunk, 2001). Self-regulated learners are masters of their own learning process and are self-directive in a sense that learning is viewed as an activity that they do for themselves in a proactive way rather than as a covert event that happens to them reactively as a result of teaching experience. Zimmerman (1986) established that self-regulation in learning are critical factors of academic achievement that learners are initiated to improve learning outcomes. For this, it may be concluded that self-regulation in learning is a factor affecting students' development of information skills.

Self-concept is another factor positively affecting the development of information skills. In the interviews, the interviewees were asked if they would tell their teachers the topic or issue they would like to learn (refer to Appendix B question 7). All of them reported no. Nevertheless, high achievers claimed that they would sought clarification from the teacher if they had anything did not know. When low achievers were asked if they would ask when they encountered difficulties in the lesson, their answers were also no.

> *Student E: Someone will voice out if it is necessary for a pause.*
>
> *Student G: I won't because if I ask then the teacher will hold the whole class for just one student. I think the teacher will find out if we don't know something.*

High achievers felt easy to ask questions in class while low achievers would wait for other classmates to ask or wait for the teacher to realize instead of seeking help from the teacher directly. High achievers and low achievers apparently had their help-seeking behaviour differently. As help-seeking is regarded as a threat to self-worth, while students are oriented to demonstrate their abilities and associate with the popular group, help-seeking is especially avoided by the low achievers (Ryan, Hicks & Midgley, 1997). If a student asks, he may be regarded not as competent as the popular group of students (Ryan & Pintrich, 1997). A possible account for high achievers not to avoid seeking

help is that they are high achievers with positive self-concept. They are well-known by the other classmates that they are the competent group of students in class. If they seek help, it signifies that there is indeed necessity for the teacher to clarify. They are very likely the students whom the low achievers would wait for their voice out to the teacher. The high achievers themselves know that seeking help is not disapproving their capabilities while the low achievers avoid to stand out by revealing their incompetence because of the problem of self-concept. Self-concept refers to the beliefs people hold about their capabilities (Bandura, 1986). It is an individual sense of self formed as a result of their own perception of how others perceive them (Cooley, 1902). Thus, students' self-concept in academic domain is largely formed by social comparisons. In the case of the interviewees, probably high achievers have positive self-concept and low achievers have less positive or even negative self-concept as they showed avoidance in help-seeking. Since ample research has proved that self-concept and achievement has a strong and positive relationship, the problem of why the high achievers performed well in the assessment of information skills while the low achievers were not can be justified.

In short, a high quality of thinking, high expectation on learning outcome, good self-regulation in learning and positive self-concept are positively related to the

development of information skills.

5.4 Factors Affecting the Development of Information Skills

Investigating into students' performance in information skills and the interview results, it is realized that there are many influential factors involved in students' Liberal Studies learning experience that can affect their development of information skills (see Figure 4 in Appendix A). With regard to students' learning environment, their ecological environment and perceived affective environment have impacts on the development of information skills. Teacher's support, including instruction, feedback and pedagogy, are affecting the development of information skills also. Last but not least, the qualities of students such as quality of thinking, expectation on learning outcome, self-regulation in learning and academic self-concept bring about effects on the development of information skills. Among these factors, teacher's support is the most controllable factor while students' learning environment and qualities of students are less controllable by the Liberal Studies teacher.

Chapter 6: Conclusion

6.1 Conclusion

This research studied the effects of students' Liberal Studies learning experience on their development of information skills. Responding to the research questions, it is found that most students have basic understanding of the six information skills. Students did particular well in primary level information skills, including task definition, information seeking strategies and location and access. For the advanced level information skills such as use of information, synthesis and evaluation, students' performance is significantly poorer than the previous three skills. Several aspects of students' Liberal Studies learning experience are also revealed and discussed to investigate into their effects on the development of information skills. It is established that a good students' learning environment such as a supportive ecological environment and a positively perceived affective learning environment; teacher's effective support such as differentiated instruction and feedback; and quality students with high quality of thinking, high expectation on learning outcome, self-regulation in learning and positive academic self-concept are all positively related to the development and achievement in information skills. Among these factors, teacher's support is regarded as a controllable factor as the teacher can modify his pedagogy from time to time for a relatively direct impact on students' development of information skills. Meanwhile,

students' learning environment and personal qualities are controllable to a small extent as they take longer time for adjustment and formation.

6.2 Limitation

It must be noted that the research has limitation in its conclusion validity. The findings could have been further strengthened if experts on information skills were consulted when developing the assessment instrument. Also, the results could be more representative if more students from different schools in Hong Kong are involved, for instance, students in all NSS forms from schools in different bandings, so that the applicability of the results can be raised to generalize the phenomenon in Hong Kong.

Moreover, there are other aspects reflecting students' learning experience and affecting the development of information skills not involved in the research because of insufficient time and resources. Since only 3 aspects of learning experience, i.e. 'positive learning experience', 'teacher support in learning' and 'active learning experience', are investigated, the whole picture of students' Liberal Studies learning experience may not be fully revealed. The comprehensiveness of the research can be enhanced by including more aspects of learning experience such as workload and assessment (Law & Meyer, 2011). Similarly, the development of information skills may

be subject to other influences such as peer coaching and private tutoring. These factors could be added in this research as a wider scale investigation.

6.3 Implication

The research addressed 3 main factors affecting students' development of information skills. Teacher's support is a controllable factor that can have impacts on students in the shortest term. To optimize their support to students, it is suggested that the time and resources for teaching issues and teaching enquiry skills should be balanced. Teachers may consider teaching some steps and frameworks for analysis explicitly to help students' systematic thinking development. Teachers should also consider differentiated instruction to provide the most suitable scaffolds for different students to cater for their individual needs.

Students' learning environment is a less controllable factor affecting their development of information skills. However, curriculum planners may help providing a supportive ecological and affective environment for students in long run. They may recommend the integration of information skills education into different curricula so that students do not only learn information skills in Liberal Studies. They may also recommend innovative pedagogies that is specifically about developing students' information skills

and provide pedagogical guidance to teachers.

Qualities of students is the least controllable factor as intervention at the earliest stage of students' lives may be needed. Nevertheless, the qualities of students can still be improved if there is reinforcement by education and nurture. The formation of quality thinking, motivation, outcome expectation and self-concept can be complicated and personalized, at the same time influential to achievement. Therefore, policy makers may invest in the practical intervention on these issues for students in Hong Kong while teachers should pay attention to students' individual situation and help them to be confident and competent learners.

For future studies, how each factor is affecting the development of information skills or a broader area such as academic achievement or competence can be researched in-depth. The relationship or cause-and-effect between the 3 factors can also be explored. Last but not least, how the pedagogies of Liberal Studies can be refined to improve training in information skills can be experimented as well.

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Appendices

Appendix A: Figures

Figure 1: The Big Six Information Skills (Eisenberg & Berkowitz, 1990)

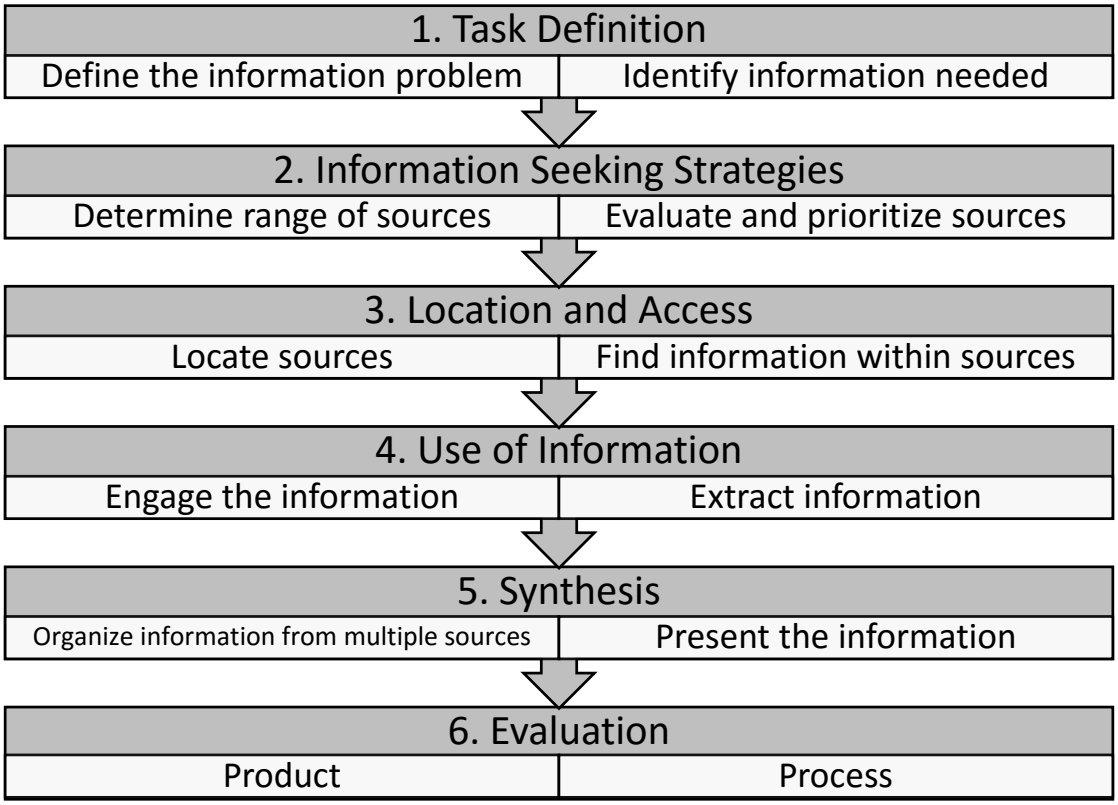


Figure 2: Theoretical Framework of the Research

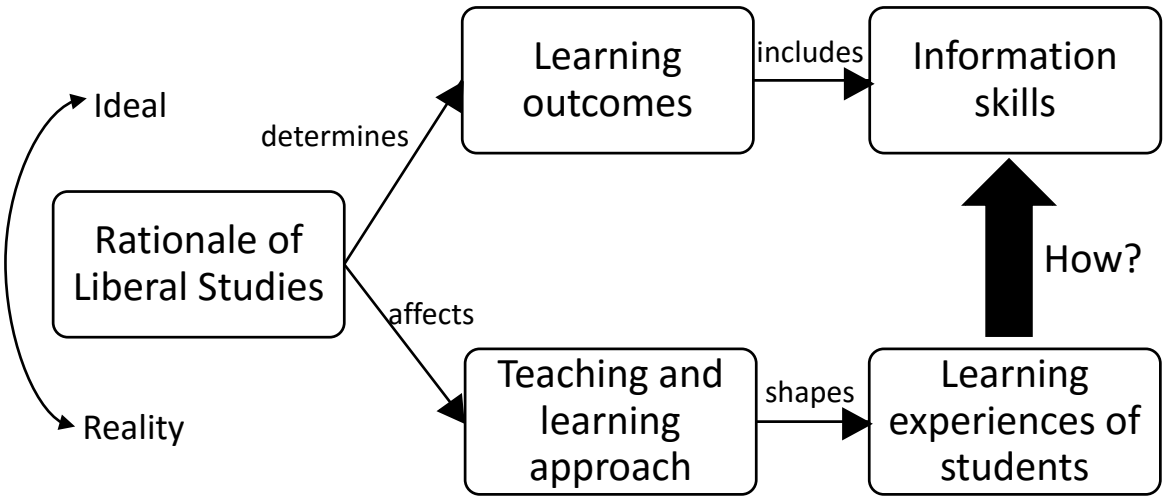


Figure 3: Information Literacy Cognitive Coding Scheme (EMB, 2005)

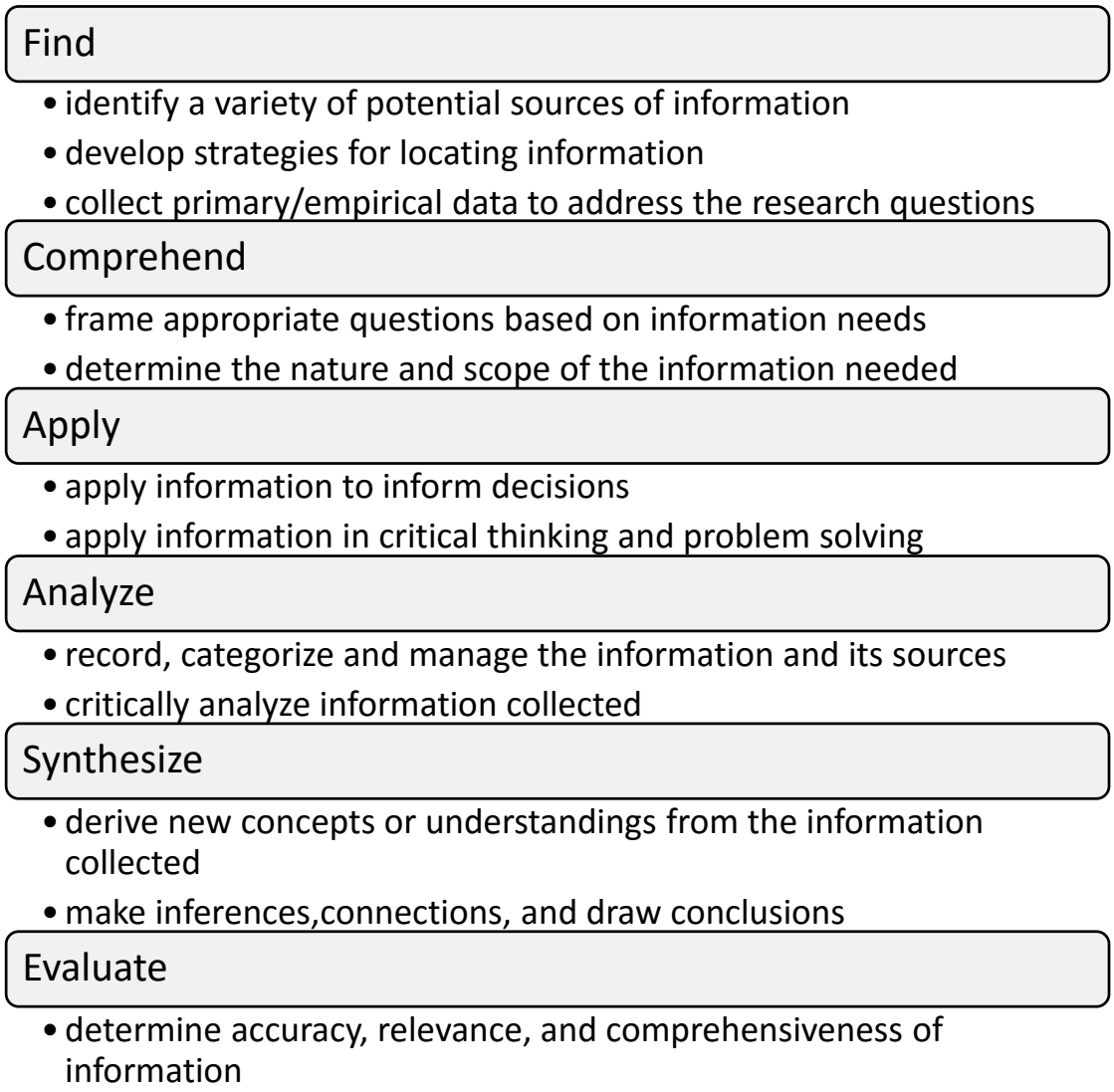
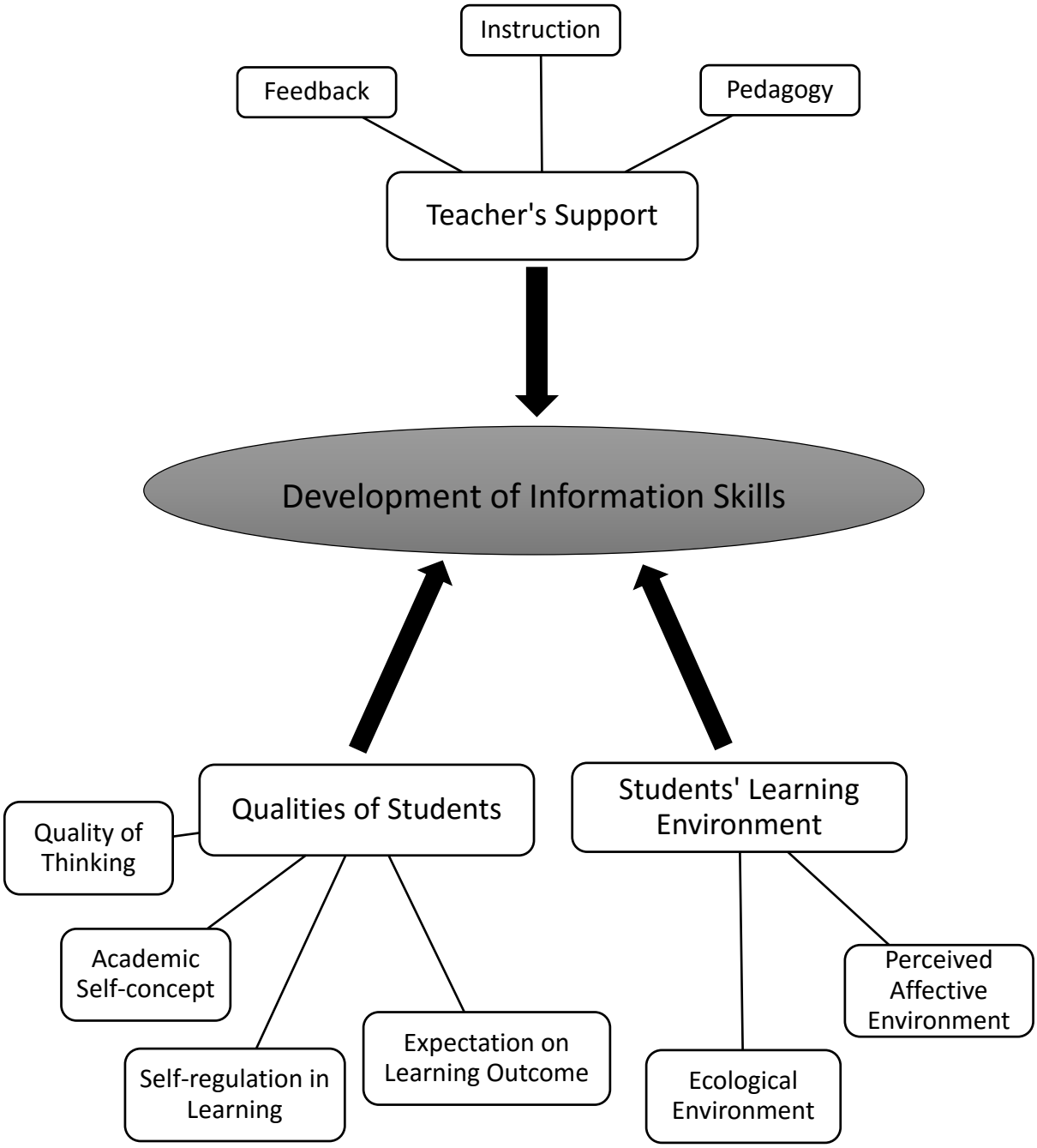


Figure 4: Factors Affecting the Development of Information Skills



Appendix B: Tables

Table 1: Sample Answers to Question 1.2 in the Assessment of Information Skills

Performance	Example	Source
Good	*What are the long-term advantages and disadvantages of using renewable energy in a city like ours?*	Participant 11
Mediocre	*What is renewable energy and why is it important?*	Participant 3
Poor	*What can we do if there is food that hasn't been eaten and is already due to the deadline?*	Participant 10

Table 2: Sample Answers to Question 2.2.1 in the Assessment of Information Skills

Performance	Example	Source
Good	*Articles about poverty problems, Interviews of people in poverty*	Participant 21
Poor	*Newspapers, Surveys done*	Participant 7

Table 3: Sample Answers to Question 2.2.2 in the Assessment of Information Skills

Performance	Example	Source
Good	*Government website on CSSA* [Comprehensive Social Security Assistance]	Participant 4
Poor	*Online*	Participant 10

Table 4: Sample Answers to Question 3.1 in the Assessment of Information Skills

Performance	Example	Source
Good	*to protect people from the deadly smog*	Participant 16
Mediocre	*public health emergency,* *unclean air in our cities,* *stay indoors in order to protect people from the deadly smog,* *one of the biggest problems we are facing globally with horrible future costs to society*	Participant 7
Poor	*Dangers of unclean air in our cities,* *deadly smog,* *public health problems*	Participant 11

Table 5: Sample Answers to Question 4.1 in the Assessment of Information Skills

Performance	Example	Source
Good	*The possible effect of air pollution to society can cause major health issues and also death. First it can be a short term effect of pollution on city people can still severe for example in source A it can cause asthma, but if it were worst case scenario it can lead to a heart disease and dementia which requires medical attention. But it may also lead to death, for examples in source A it says that air pollution killed 3.3 million people in the US, however in China, India and Pakistan also in a bad situation like US.*	Participant 13
Mediocre	*Air pollution harms the public's health by increasing the cases of respiratory illnesses. The effect it will form on society is that many people will die prematurely because of the pollution the children and the elderly will suffer more since they have much weaker bodies and this will definitely decrease the quality of life for our society because everybody*	Participant 11

	would be upset about this all the time.	
Poor	*It could be creating a ticking time bomb of public health problem, and can penetrate deep into the lungs and cause respiratory problems.*	Participant 10

Table 6: Sample Answers to Question 4.2 in the Assessment of Information Skills

Performance	Example	Source
Good	*There is a direct correlation. From A1, it is indirectly referred by saying air pollution causes health problem. From A2, it is more specific to tell that 3537 deaths in 2010 as a result of a gas release specifically by engine and power station. Other mentions of premature deaths as a result of air pollution. From B, as previously mentioned, nitrogen dioxide causes premature death. Up to 2196 people died as a result of general air pollution locally.*	Participant 16
Mediocre	*According to Source A2 and B, as the traffic flow is increased, more air pollution is being produced which also goes inside the body of the people who are in traffic. In Hong Kong, the tunnels have increased as the traffic had increased which also showed an increase in nitrogen dioxide, which is an indicator of measuring air pollution.*	Participant 19

Poor	*Part 2 of source A explains the effects of the gases from car engines on the environment and how they can result in health issues and ultimately, premature deaths.*	Participant 8

Table 7: Sample Answers to Question 5 in the Assessment of Information Skills

Performance	Example	Source
Good	*Looking at how much we participate/ share ideas in class,* *The number of relevant points we've given,* *The websites or sources we've visited for our project*	Participant 11
Mediocre	*Ask students to make a presentation on a different culture and grade them depending on how detailed it is,* *Ask them to pair up with someone they don't know and make them do a small presentation on what they learned*	Participant 2
Poor	*Arouse my awareness,* *Give me reading materials,* *Watch more news*	Participant 7

Appendix C: Sample of Assessment of Information Skills

Information Skills Assessment

Student Name: _____

Class: _____ ( )

1. Task Definition

1.1 Write ONE appropriate question that has to be asked in order to investigate 'Hong Kong people's Quality of Life'.

1.2 Write ONE appropriate question that has to be asked in order to investigate 'Renewable Energy'.

---

2. Information Seeking Strategies, Location

2.1 Determine TWO information sources and state where you can find them to solve the problem of 'What are the causes of poverty in Hong Kong?'

Information source	Where you can find the source
2.1.1a	**2.1.2a**
2.1.1b	**2.1.2b**

2.2 Determine TWO information sources and state where you can find them to solve the problem of 'How did Hong Kong people react to SARS in 2003?'

Information source	Where you can find the source
2.2.1a	**2.2.2a**
2.2.1b	**2.2.2b**

3. Access, Use of Information

Read and circle in the article the answers to the following questions:

Example:

This is an example. This is an example. This is an example. This is an example. This is the answer to the question. This is an example. This is an example.

3.1 Why did Chinese authorities force schools and businesses to close down and urge people to stay indoors?

The World Health Organisation (WHO) has said that air pollution is now a "public health emergency" across the globe, in a stark warning about the dangers of unclean air in our cities.

In December, Chinese authorities issued a pollution 'red alert' in Beijing, forcing schools and businesses to close down and urging people to stay indoors in order to protect people from the deadly smog.

Speaking to *The Guardian*, Maria Neira, the head of public health at the WHO, said: "We have a public health emergency in many countries from pollution, one of the biggest problems we are facing globally, with horrible future costs to society."

Neira told the paper that although the short-term effects of pollution on city-dwellers' health can be severe, consistently high levels could be creating a ticking time bomb of public health problems.

Source A (Part 1)

3.2 According to Neira, what will be under strain if air pollution levels stay high?

Exposure to air pollution can cause health issues like asthma, heart disease and potentially even dementia, conditions which require medical attention and hospital beds. If air pollution levels stay high, global health services in the future could be put under even more strain than they are now.

According to the United Nations, 3.3 million people around the world die prematurely due to the effects of air pollution every year. Most of these deaths occur in China, India and Pakistan, but the UK is badly affected too.

According to a estimates made by researchers from King's College London, almost 9,500 people in London alone died prematurely in 2010

due to pollution - 3,537 from the effects of nitrogen dioxide (NO2), which is expelled by engines and power stations, and 5,879 from PM2.5, the name given to the smallest particles of pollution which can penetrate deep into the lungs and cause respiratory problems.

Across the UK, the number of early deaths that can be blamed on pollution could be as high as 60,000 a year, according to a report from official advisory body the Committee on the Medical Effects of Air Pollutants, which was reported by The Sunday Times.

Source A (Part 2)

4. Synthesis

Local NGO the Clean Air Network said 2,196 people died prematurely in 2015 due to air pollution. The group urged the government to take measures to curb vehicle emissions locally, saying it was neither “meteorological nor regional factors” that had the most impact on air quality.

As traffic flow in Hong Kong’s three tunnels increased from 228,000 daily trips in 2005 to 251,000 in 2014. Roadside emissions in Causeway Bay, Central, Central and Western and Eastern, where the tunnels are located, increased at a similar rate showing that the rise in nitrogen dioxide, an indicator of air pollution, was partially caused by worsening traffic, said the network.

Source B

4.1 With reference to Source A (both Part 1 and 2) in Section 3 (Page 5-6), describe <u>ONE</u> possible effect of air pollution on the society.

4.2 With reference to Source A (both Part 1 and 2) and B, explain how traffic flow is related to premature death.

5. Evaluation

Suggest <u>THREE</u> ways that teachers can evaluate your performance in a project investigating into 'Globalization in Hong Kong'.

Appendix D: Sample of Interview Questions

Positive learning experiences (Feeling)

1. How do you feel when you are having LS lesson? Why?
2. Refer to the test on information skills that you have done previously, how do you learn those skills? How is the learning atmosphere when those skills are trained/taught? Do you find those skills useful? Do you want to learn more advanced information skills? If so, what further training/ learning activities do you want?
3. What activities do you usually have in LS lesson? How would you describe those activities? What makes you to have that feeling?

Teacher support in learning (Teachers as facilitator)

4. Refer to the used learning materials and activities sheets, how does your teacher use these materials? How does s/he instruct you?
5. Can you tell me an instance that you or your classmates are receiving your teacher's suggestion/ comments?
6. What does your teacher do or say when you answer correctly? What does your teacher do or say when you answer wrongly? Would your teacher's speaking or actions be different for easy and difficult questions?

Active learning experiences (Students as active learner)

7. Would you tell your teacher the topics/issues that you want to learn? Would you tell your teacher the time you want to spend on certain topics? How does your teacher respond to your request?
8. What forms of group activities do you have in LS lesson? How frequent? Can you show me one or two tasks that you have done in a group?
9. Apart from group activities/tasks, what do you have to do during LS lesson/ How do you learn in LS lesson? What makes you engage in those activities/in the lesson?
10. How often do you use information technology in LS lesson? Under what occasion do you use it? How do you use it?

Appendix E: Sample of Principal's Consent Form

1st March, 2016

Dear Mr. Chen,

I am Li Ka Huen Nicole, a year 4 student of Bachelor of Education (Liberal Studies) at Faculty of Education, The University of Hong Kong. I will conduct a research project on the effects of students' Liberal Studies learning experience on their development of information skills. I would like to invite your school to participate. Since information skills are important learning outcomes of Liberal Studies, it is significant to investigate how different learning experiences can affect students' development of information skills. The participation of your school will facilitate the data collection process of this research because of my teaching practicum in your school.

Students who participate in this research will complete a test on information skills. The test is composed of 9 short questions and can be completed in 30 minutes. Some students will be further invited for an interview on their Liberal Studies learning experiences. The interview will be within 30 minutes. If necessary, a follow-up interview may be needed. The whole data collection process will commence on 22nd February 2016 and terminate on 22nd April 2016 in the school. The completed tests on information skills will be stored in a locked cabinet at my home. For the interview(s), audio-recording and note-taking will be done. Participants have the right to review the recording and notes at any time and erase part of or the entire recording and notes. The audio will be stored in an encrypted computer folder in my notebook computer while the notes will be stored in a locked cabinet at my home. If any participants wish to withdraw from the study, all the data collected from that participant will be erased and destroyed. Each participant will be assigned a code as a personal identifier. It will not be related to their identities in school such as student ID and in any other aspects of life such as Hong Kong ID. No school, individual or personal information will be identified in any of the publications and public dissemination activities. All data and personal identifiers will be destroyed in 1 year after the first publication of the research paper.

Please complete the reply slip below to indicate whether your school would participate in this research. Investigating into the effects of students' Liberal Studies learning experience on their development of information skills can provide useful information for teachers to gain understanding on students and facilitate curriculum planning. Participation is entirely voluntary, and all information obtained will be used for research purposes only. I will neither be the teacher of the student participants nor handle their assignments and assessments, therefore, there is no conflict of interests between the researcher and participants. The research will bring minimal psychological harms and discomfort to the participants. If you have any questions about the research, please feel free to contact me (6273-1371, likahuen@connect.hku.hk) or my supervisor, Dr. Anthony Cheng (2241-5797, chengkla@hku.hk). If you want to know more about the rights as a research participant, please contact the Human Research Ethics Committee, the University of Hong Kong (2241-5267).

Your help is very much appreciated.

Yours sincerely,

Li Ka Huen Nicole
Bachelor of Education (Liberal Studies) Student,
Faculty of Education,
The University of Hong Kong

Reply Slip

I have read the information above and decided that my school *will / will not collaborate with Li Ka Huen Nicole from Faculty of Education at the University of Hong Kong for the study “Effects of students' Liberal Studies learning experience on their development of information skills”.
(* Please delete the inappropriate.)

School’s Name: _____

Principal’s Name: _____

Principal’s Signature: _____

Appendix F: Sample of Parent's Consent Form

1st March, 2016

Dear Parents,

I am Li Ka Huen Nicole, a year 4 student of Bachelor of Education (Liberal Studies) at Faculty of Education, The University of Hong Kong. I will conduct a research project on the "effects of students' Liberal Studies learning experience on their development of information skills" and would like to invite your child to participate. Information skills are important learning outcomes of Liberal Studies. It is significant to investigate how the development of information skills is affected by different learning experiences.

Students who participate in this research will complete a test on information skills. The test is composed of 9 short questions and can be completed in 30 minutes. The completed tests on information skills will be stored in a locked cabinet at my home. Some students will be further invited for an interview on their Liberal Studies learning experiences. The interview will be within 30 minutes. If necessary, a follow-up interview may be needed. The whole data collection process will commence on 22nd February 2016 and terminate on 22nd April 2016 in the school. For the interview(s), audio-recording and note-taking will be done. Participants have the right to review the recording and notes at any time and erase part of or the entire recording and notes. The audio will be stored in an encrypted computer folder in my notebook computer while the notes will be stored in a locked cabinet at my home. If any participants wish to withdraw from the study, all the data collected from that participant will be erased and destroyed. Each participant will be assigned a code as a personal identifier. It will not be related to their identities in school such as student ID and in any other aspects of life such as Hong Kong ID. No school, individual or personal information will be identified in any of the publications and public dissemination activities. All data and personal identifiers will be destroyed in 1 year after the first publication of the research paper.

Please complete the reply slip below to indicate whether you would allow your child to participate in this research soon. Participation is entirely voluntary, and all information obtained will be used for research purposes only. I will neither be the teacher of the student participants nor handle their assignments and assessments, therefore, there is no conflict of interests between the researcher and participants. Your child's participation will not affect any of his/her school grades. The research will bring minimal psychological harms and discomfort to the participants. If you have any questions about the research, please feel free to contact me (6273-1371, likahuen@connect.hku.hk) or my supervisor, Dr. Anthony Cheng (2241-5797, chengkla@hku.hk). If you want to know more about the rights as a research participant, please contact the Human Research Ethics Committee, the University of Hong Kong (2241-5267).

Your help is very much appreciated.

Yours sincerely,

Li Ka Huen Nicole
Bachelor of Education (Liberal Studies) Student,
Faculty of Education,
The University of Hong Kong

Reply Slip

Student Name: _____ Class: _____ Class No.:_____

I ** will / will not give permission for my child to participate in the research.
I ** agree / do not agree to the audio-recording of my child during the procedure.
I ** wish / do not wish my child to be identified.
(** Please delete as appropriate.)

Parent Name: _____

Parent Signature: _____

Date: _____

Appendix G: Sample of Student's Consent Form

THE UNIVERSITY OF HONG KONG

<Effects of students' Liberal Studies learning experience on their development of information skills>

Dear Students,

I am a year 4 student of Bachelor of Education (Liberal Studies) at Faculty of Education, The University of Hong Kong and am now conducting a study titled "Effects of students' Liberal Studies learning experience on their development of information skills". I would like to invite you to participate.

Purpose of the Study

This study aims to investigate into the effects of students' Liberal Studies learning experience on their development of information skills.

Procedures

You are invited to participate in a test on information skills at school. The test is composed of 9 short questions and can be completed in 30 minutes. You may be invited for an interview on your Liberal Studies learning experience. The interview will be within 30 minutes and held at school. If necessary, a follow-up interview may be needed and held at school.

Potential Risks / Discomforts and Their Minimization

Your participation in this research is entirely voluntary. You can choose to stop at any time without negative consequences. I will neither be your teacher nor handle your assignments and assessments. Your participation in the research and performance in the test will not affect any of your school grades.

Confidentiality

All information obtained in this study will be used for research purpose only. To ensure confidentiality, each participant will be assigned a code as a personal identifier. It will not be related to your identities in school such as student ID and in any other aspects of life such as Hong Kong ID. No school, individual or personal information will be identified in any of the publications and public dissemination activities. All data and

personal identifiers will be destroyed in 1 year after the first publication of the research. The completed tests on information skills will be stored in a locked cabinet at my home. For the interview(s), audio-recording and note-taking will be done. Participants have the right to review the recording and notes at any time and erase part of or the entire recording and notes. The audio will be stored in an encrypted computer folder in my notebook computer while the notes will be stored in a locked cabinet at my home. If you wish to withdraw from the study, all the data collected from you will be erased and destroyed.

Questions and Concerns

If you have any questions about the research, please feel free to contact me (6273-1371, likahuen@connect.hku.hk) or my supervisor, Dr. Anthony Cheng (2241-5797, chengkla@hku.hk). If you have questions about your rights as a research participant, please contact the Human Research Ethics Committee, HKU (2241-5267).

Your help is very much appreciated.

Yours sincerely,

Li Ka Huen Nicole,
Bachelor of Education (Liberal Studies) Student,
Faculty of Education,
The University of Hong Kong

Student Reply Slip

If you agree to take part in this project, please put a tick in the following box and sign your name besides it.

☐ I agree to participate in this project.

I ** agree / do not agree to the audio-recording during the procedure.

I ** wish / do not wish to be identified.

(** Please delete as appropriate.)

Signature: _____

OR

If you do not agree to take part in this project, please put a tick in the following box and sign your name besides it.

☐ I do not agree to participate in this project.

Signature: _____

Student Name: _____ Class: _____ Date: _____